Practice Guidelines

The AANS/CNS Joint Section on Disorders of the Spine and Peripheral Nerves, under the direction of Dr. Mark Hadley and Dr. Beverly Walters, has completed an evidence-based review of literature pertaining to the treatment of cervical spine trauma and spinal cord injury. This work represents a monumental effort of many prominent experts in spinal surgery and embraces twenty-two clinical questions ranging from immobilization in the field, to the role of Methylprednisolone after acute spinal cord injury. The evidence took two years to compile and analyze.

The end result, Practice Guidelines in the Treatment of Cervical Spine and Spinal Cord Injury, was published under separate cover as a supplement to the March 2002 issue of the journal Neurosurgery. This publication has become the reference manual for all clinicians involved in treating cervical spine injuries from the paramedics in the field, to the rehabilitation specialists involved in long-term follow-up.

We are continuing to publish a synopsis of each of the recommendations in this and subsequent editions of Neurosurgery News. The following is an excerpt from Chapter 5 of 22.

RADIOGRAPHIC ASSESSMENT OF THE CERVICAL SPINE IN SYMPTOMATIC TRAUMA PATIENTS

RECOMMENDATIONS

Standards: A three view cervical spine series (AP, lateral, and odontoid views) is recommended for radiographic evaluation of the cervical spine in patients who are symptomatic following traumatic injury. This should be supplemented with computed tomography to further define areas that are suspicious or not well visualized on the plain cervical x-rays.

Guidelines: There is insufficient evidence to support treatment guidelines.

Options: It is recommended that cervical spine immobilization in awake patients with neck pain or tenderness and normal cervical spine x-rays (including supplemental CT as necessary) be discontinued following either:
   a) Normal and adequate dynamic flexion/extension radiographs; or
   b) Normal MRI study obtained within 48 hours of injury.
Cervical spine immobilization of obtunded patients with normal cervical spine x-rays (including supplemental CT as necessary) may be discontinued:
   a) Following dynamic flexion/extension studies performed under fluoroscopic guidance; or
   b) Following a normal MRI study obtained within 48 hours of injury; or
   c) At the discretion of the treating physician.
RATIONALE:

Trauma patients who are symptomatic, that is, complain of neck pain, have cervical spine tenderness, or have symptoms or signs of a neurological deficit associated with the cervical spine, and trauma patients who cannot be assessed for symptoms or signs (those who are unconscious, uncooperative or incoherent, intoxicated, or who have associated traumatic injuries that distract from their assessment) require radiographic study of the cervical spine prior to the discontinuation of cervical spine immobilization. Many authors have proposed strategies and imaging techniques to accomplish x-ray clearance of the cervical spine after trauma, particularly in the symptomatic or the obtunded patient. One, three, and five view static cervical spine x-rays, computed tomography (CT), magnetic resonance imaging (MRI), bone scans, flexion/extension radiographs, dynamic fluoroscopy with or without somatosensory evoked potential monitoring, and other studies have all been described as useful for the determination of spinal injury and potential spinal instability following traumatic injury. The purpose of this review is to determine the optimal radiographic assessment strategy necessary and sufficient to exclude a significant cervical spine injury in the symptomatic trauma patient.

SUMMARY:

In summary, no single radiographic study can adequately rule out cervical spinal injury in all symptomatic patients. A three-view spine cervical spine series supplemented with CT through areas difficult to visualize and “suspicious” areas will detect the vast majority of spinal injuries. This combination of studies represents the minimum required for clearance of the cervical spine in the symptomatic patient. The negative predictive value of this combination of studies is reported to be between 99% and 100% in several Class II and III evidence studies.

In the awake patient, dynamic flexion/extension views (with at least 30° excursion in each direction) are safe and effective for detecting the majority of “occult” cervical spine injuries not identified on plain x-rays. The negative predictive value of a normal three view series and flexion/extension views exceeds 99%. Patients who are unable to cooperate with active flexion/extension radiographs due to pain or muscle spasm may be maintained in a cervical collar until they are able to cooperate, or may be studied with MRI. A negative MRI within the first 48 hours of injury in addition to normal radiographs and supplemental CT appear to be sufficient for the clearance of the cervical spine. The significance of a positive MR study is currently unclear. It is suggested that cervical immobilization be continued in these patients until delayed flexion/extension views can be obtained.

In the obtunded patient with a normal three-view x-ray series and appropriate CT of the cervical spine, the incidence of significant spine injury is less than 1%. Based upon mechanism of injury and clinical judgment, the cervical spine in selected patients may be considered cleared without further study. In the remainder of cases, flexion/extension performed under fluoroscopic visualization appears to be safe and effective for ruling out significant ligamentous injury, with a reported negative predictive value of over 99%. Because the incidence of occult injury diagnosed with dynamic flexion/extension fluoroscopy in the setting of normal plain cervical spine x-rays and CT images is low, it is probably most efficient for these procedures to be performed by staff
in the department of radiology, although variances in local experience should be respected. MRI represents another option for clearance of the spine in this patient population, and a negative MRI within 48 hours of injury appears to effectively eliminate the likelihood of a significant ligamentous injury. However, MRI evaluation will result in a large number of false positive examinations, and the consequences of prolonged unnecessary immobilization in the obtunded patient are not insignificant.

**ANNUAL MEETING – SAN DIEGO, CALIFORNIA**

The AANS/CNS Section on Disorders of the Spine and Peripheral Nerves will hold its 20th annual meeting in San Diego, California at the beautiful Marriott Hotel and Marina from March 17-20. Make your reservations now!

**AWARDS**

**RESEARCH FUNDING:** The AANS/CNS Section on Disorders of the Spine and Peripheral Nerves has established three Research Grants: the Larson Research Award, the Kline Research Award, and the Apfelbaum Research Award. These are intended to establish funding for clinical relevant research related to the spine and peripheral nerves, and to provide a means of peer review for clinical research projects to help improve the quality of the proposal and therefore, enhance competitiveness for National Institutes of Health (NIH) funding. The awards are also meant to create an annual funding mechanism to establish the AANS/CNS Spine Section as a known source for quality clinical research aimed at answering questions pertaining to the treatment of disorders of the spine and peripheral nerves. Depending upon the quality of the award submissions, there may be one award in each category annually.

The Larson Award sponsored by DePuy Spine is limited to clinical research with funding up to $30,000. The Apfelbaum Award sponsored by Aesculap is for either basic or clinical research related to the spine and the Kline Award sponsored by Integra is for either basic or clinical research related to peripheral nerves. Both the Kline and Apfelbaum Awards fund up to $15,000. They are intended for primary investigators with proposed research requiring national level funding, to support the preparation of grant proposals and external consultations and to assist in the development of the proposal, planning meetings, and the collection of pilot data.
Work that can be completed without such support (such as literature review and preliminary protocol design) should be completed before applying for these awards.

The format of the proposal should follow that of the NIH grant package. The applicants should clearly define their specific aims, include a pertinent literature review, and describe the proposed methodology and plan for analysis of data. This part of the proposal should not exceed 10 double-spaced pages. A detailed budget and budget justification should also be included. The budget should not include salary support for the primary investigator or co-investigators. Institutional indirect costs are also not to be met using the awards.

Application details for research grants are available from the Research Awards Committee Co-Chair - James D. Guest M.D., Ph.D., Department of Neurological Surgery, Lois Pope LIFE Center, 1095 NW 14th Terrace (D4-6), Miami, FL, 33136, Phone- 305-575-7059, or can be downloaded from the Web site at www.neurosurgery.org/spine. The application deadline for grants to be awarded for 2005 is December 1, 2004.

**FELLOWSHIP FUNDING:** The **Cloward Fellowship** sponsored by Medtronic Sofamor Danek and the **Cahill Fellowship** sponsored by Synthes are each awarded annually to one U.S. or Canadian trained neurosurgical resident to provide supplemental funding for advanced education and research in disorders of the spine or peripheral nerves in the form of fellowship training away from their parent institution. The amount of the award is $30,000. Applicants should be residents in training or ABNS eligible fellows must provide a letter of acceptance from the designated mentor and program, a letter of support from their training program director, a description of the proposed fellowship with the educational or research goals, and a current CV.

The **Sonntag International Fellowship** sponsored by Medtronic Sofamor Danek and the **Crockard International Fellowship** sponsored by DePuy Spine are each awarded annually to a neurosurgical resident or neurosurgeon from outside of the U.S. or Canada to provide supplemental funding for advanced education and research in disorders of the spine in the form of a fellowship experience in the United States or Canada. The amount of each award is $5,000. Applicants must provide a letter of acceptance from the designated mentor and program, a letter of support from their training program director if applicable, a description of the proposed fellowship with the educational or research goals, and a current CV.

Application information for the Fellowship Awards may be obtained from the Research and Fellowship Award Committee Co-Chair- Mitchell R. Gropper, MD c/o CINN Northwest Indiana, 9003 Calumet Ave. Ste. 501, Munster, IN 46321, (219) 836-5167, via e-mail at discodoc2003@yahoo.com or downloaded from the Web site at www.neurosurgery.org/spine. The application deadline for the 2004 Fellowship Awards is December 1, 2003.

**RESIDENT AWARDS:** The **Mayfield Award** is presented annually by the Joint Section on Disorders of the Spine and Peripheral Nerves to the neurosurgical resident or BC/BE fellow in North American training who authors the outstanding manuscript detailing a laboratory or clinical investigation in the area of spinal or peripheral nerve disorders. This award is also applicable to individuals in DO training programs. The manuscript for this award is presented
by attaching to the related abstract in the call for abstract process. Two awards are available, one for clinical research and one for basic science research. Each recipient will receive a $1,000.00 cash award and an honorarium up to $2,000 to cover the expenses of attendance at the annual meeting of the Section. Abstracts to be considered for the **Mayfield Award** should be identified as such on the annual meeting abstract submission form and submitted prior to deadline. Finalists will be asked to submit the complete manuscript to the Awards Committee by December 1.

For further information and submission forms, please contact: Mitchell Gropper, MD (Contact Information listed above) or review the Web site at [www.neurosurgery.org/spine](http://www.neurosurgery.org/spine).

**DEADLINES**
- September 24, 2004: Mayfield Awards
- December 1, 2004: Larson, Apfelbaum, and Kline Research Awards
- December 1, 2004: Cloward, Sonntag, and Crockard Fellowship Awards

**CODING CORNER – Gregory J. Przybylski, MD**

**CPT 2004 CODING CHANGES FOR SPINAL SURGERY**

Current Procedural Terminology (CPT) remains the standard for describing physician services in a numerical format. In order to maintain a contemporary coding system, the CPT Editorial Panel meets quarterly to review requests for new and revised codes. However, the current coding set does not always include procedures that have been performed for many years. For CPT 2004, several new codes for spinal surgery and spinal/nerve injections were added to describe long-standing procedures that were not adequately considered by the prior nomenclature.

Although standard anterolateral and posterior approaches to the thoracolumbar spine have been included in CPT, there has been significant difficulty in describing the less commonly used lateral extracavitary approach to the thoracolumbar spine. Prior editions of CPT included sections for anterolateral thoracotomy and lumbotomy approaches as well as posterior laminectomy, costotransversectomy, and transpedicular approaches. However, these code sets failed to describe the unique aspects of the lateral extracavitary approach (i.e. lateral rachotomy) popularized by Dr. Sanford Larson. The coordinated efforts of the Joint Section’s Coding Committee with the CNS CPT Advisor Dr. Pat Jacob led to the development of a set of arthrodesis and decompression procedures performed through a lateral extracavitary approach. In addition, multidisciplinary efforts of several specialty societies resulted in several minor new and revised codes in the areas of shunting, pain management, and nerve injections. This coding update will review the new and revised 2004 CPT codes pertinent to the spinal neurosurgeon’s practice.

**LATERAL EXTRACAVITARY APPROACH TO SPINE SURGERY**
Although less commonly performed than anterolateral and posterior approaches, the lateral extracavitary approach is an important technique in a spine surgeon’s armamentarium. However, the approach classifications available in CPT were limited to anterior and posterior approaches alone. In order to parallel the arthrodesis and decompression codes that use these more common approaches, a series of six codes were developed to describe similar procedures using the lateral extracavitary approach. An interbody arthrodesis performed in the thoracic (22532) or lumbar (22533) spine includes the minimal discectomy needed for the arthrodesis, whereas each additional level is coded 22534. If the thoracolumbar junction is crossed, then a single primary arthrodesis code is chosen, whereas the remaining levels are described with the additional level codes. Similarly, a decompression involving a partial or complete vertebrectomy is described in the thoracic (63101) and lumbar (63102) spine, with each additional level coded as 63103. If both arthrodesis and decompression codes are performed in the same operative setting, the lesser valued arthrodesis codes would be subject to the multiple procedural rule and thus would be appended with the –51 modifier. In contrast, the additional level codes are never appended with the –51 modifier as these are only valued for the intraoperative physician work performed. Furthermore, posterior arthrodesis, posterior decompression, spinal instrumentation, and bone graft harvest performed during the same operative session would be reported separately with the appropriate codes.

**Syrinx Shunts**

Although shunts are commonly used to decompress a spinal cord syrinx into a variety of locations, coding nomenclature included the subarachnoid space and peritoneal cavity, but did not include the thoracic cavity. Since the physician work of peritoneal and pleural placement of the distal shunt was somewhat similar, an editorial change to the code describing peritoneal placement (63173) was recommended to the CPT Editorial Panel, allowing for pleural placement as well.

**Pump Refill by Physicians**

Precedent for implantable pump refilling excluded consideration of physician work. The Centers for Medicare and Medicaid Services (CMS) spends significant money annually on payments for drug infusions, typically through an intravenous route for delivery of chemotherapeutic agents. Since these intravenous injections are usually performed by non-physician providers, CMS has not included physician work in the drug delivery code values. However, pumps delivering intrathecal or intraventricular drugs such as Baclofen or Morphine may require direct physician injection of the medication into the pump. In order to allay concerns about differentiating situations in which a non-physician provider performs the pump refill, a companion code was developed that specifies refilling performed by a physician (95991). Despite resistance to acknowledge this legitimate physician work, new ground was broken when the Relative-value Update Committee (RUC) recommended physician work to be included in this code, which was subsequently accepted by CMS. In contrast to 95990, the new code can only be used if the physician personally performs the injection.
**MISCELLANEOUS CODES**

Finally, several injection codes were developed to improve the comprehensiveness of this section. For example, a code for catheter placement to infuse anesthetic agents to the lumbar plexus (64449) was added to complement 64448 for femoral nerve infusions. In addition, two codes for injection of a neurolytic drug to the celiac plexus (64680) or superior hypogastric (64681) plexus was developed.

CPT remains an evolving process that must be constantly refined to account for changes in techniques as well as to identify older procedures not well-described by the current nomenclature. Although lags in FDA approval, sparse peer-reviewed publication of efficacy, and low frequency of performance may delay the development of new codes, the Joint Section Coding Committee chaired by Dr. William Mitchell continues to work with the Coding and Reimbursement Committee of the AANS and CNS to keep the nomenclature of CPT contemporary with the current practice of spinal neurosurgery.

**CONSULTANTS CORNER**

In the last Neurosurgery News we presented a 29 year old right handed systems engineer who developed pain and numbness in the left side of his chest, aggravated by coughing and sneezing eight years prior. Investigations at that time demonstrated a Chiari I malformation with cervical syringomyelia. A syringo-subarachnoid shunt was placed in the upper thoracic spine. He did well until 18 months ago when he began to notice symptom recurrence, worsening numbness, occipital cough headaches, and physical findings of an early myelopathy. Imaging studies showed congenital fusion of the atlas to the clivus and upward migration of the odontoid with compression of the brainstem, tonsillar descent to the level of C2, and a large cervical syrinx.

We asked our panel of experts what they would do. In random order, here is what they said:

- **This case presents a difficult problem. I would simplify this process by dividing the problem into three component parts from a treatment strategy determination perspective.** First, the upward migration of the odontoid process and brainstem compression, in my opinion, should be initially treated with cervical traction. I would begin with small weights in the range of five pounds and gradually increase this to twenty-five or thirty pounds over five days. I would do this during the five-day period prior to a planned surgery.

  Regardless of whether or not the deformity is reduced with traction, I would then plan a suboccipital craniectomy, duraplasty and occipital cervical fusion to C2 or C3, depending on the lower extent of the tonsils and the lower extent of the decompression. I would use a polyaxial screw fixation system with screw fixation to the occiput. If symptoms were not significantly relieved by this surgery, and if significant brainstem compression persisted, I would perform a transoral decompression, approximately one week after the first operation.

- **This scenario is not entirely uncommon. There are three distinct problems present in this case: 1) vertical migration of the odontoid process; 2) Chiari I malformation; 3) cervicothoracic syringomyelia. As I find shunting a low-pressure syrinx to be frequently futile, my treatment would be aimed at eliminating the**
mechanical obstruction to CSF flow which I believe is responsible for the current clinical picture. If the CSF pathways can be restored, then there is a reasonable likelihood that the syrinx may resolve over time.

Treatment plan- On Rotorest bed, place Gardner-Wells tongs. Begin with 5 lbs. skeletal traction and follow serial neurologic exams and lateral cervical spine radiographs. Increase traction in 2 lb. increments, over 24 hours, up to a maximum of 15 lbs. After 3 days of traction, repeat the CT scan, performed with the patient in traction, and compare the sagittal reformations versus the previous CT scan.

If the vertical subluxation is reduced, perform a posterior surgical procedure. This surgery would include a suboccipital craniectomy with C1 laminectomy and relaxing Y-shaped dural release (with the patient still in traction to maintain the reduction), and fuse the occiput to the cervical spine. A large block of autologous iliac graft, with the inner cortex removed, can be wedged in between the decorticated occiput and the decorticated C2 spinous process. Stabilization would be accomplished with a screw-plate-rod system which includes an occipital plate secured in the midline keel with 12-14 mm screws, bilateral pedicle screws at C2, and bilateral lateral mass screws at C3 and C4. Additional generous quantities of morselized iliac autograft bone would be used from the occiput to C4. Rods would be contoured to secure the occipital fixation points to the cervical spine (while still in traction). After securing the construct, release the traction. This maneuver violates the principle of not “loading” screws; however, it allows the reduction achieved preoperatively to be preserved. This is the reason why the C2 pedicle screws are “backed up” with 2 pairs of lateral mass screws (to protect the C2 screws). A postoperative CT scan would be performed on the third postoperative day to assess the adequacy of the decompression, the alignment, and the placement of the instrumentation.

If the vertical subluxation was unable to be adequately reduced preoperatively with traction, then a transoral resection of the odontoid process would be performed initially, followed by the occipitocervical procedure outlined above. The only difference is that the traction would be removed prior to any definitive fixation if the transoral procedure were performed.

No definitive treatment of the syrinx would be performed initially. Serial neurologic examinations would be performed over the first 3 months postoperatively with an MRI repeated at 3 months to evaluate the Chiari decompression, the size of the syrinx, and the positioning of the odontoid, or its remnant, with respect to the brainstem. Plain radiographs and clinical follow-up evaluations would be maintained for a minimum two year period postoperatively to confirm the fusion status and the clinical outcome.

- There are several interrelated problems. A Chiari Malformation, C1-2 subluxation and basilar invagination, plus the syringomyelia. I would recommend treating the Chiari and craniovertebral junction deformity simultaneously. I would place the patient in halo traction in extension to try and reduce the invagination and C1-2 subluxation. If the deformity is completely reducible, then I would perform a suboccipital craniectomy and upper cervical laminectomy plus an occipitocervical fixation and fusion. If however the invagination is not reducible and there is residual ventral compression, then a staged transoral procedure may also be needed. I would not perform any immediate surgery to reshunt the syrinx. With adequate decompression of the Chiari, the syrinx should resolve or improve.

- This patient is exhibiting signs of spinal cord dysfunction primarily related to the syrinx cavity. The syrinx is almost certainly related to the Chiari malformation, the effects of which are magnified by the upward translation of the dens into the foramen magnum.

In terms of treatment, given the patient’s age and history of progressive symptoms, I believe that intervention is appropriate at this time. I would first recommend placement of a halo ring for a trial of axial traction. Hopefully, traction applied over a few days would result in a reduction of deformity at C1-2. Following traction and reduction, a posterior decompression of the foramen magnum via a suboccipital craniectomy and C1 laminectomy would be performed in order to decompress the posterior fossa. Although we are not provided parasagittal CT images, it is doubtful that transarticular screw fixation at
C1-2 is feasible given the assimilation of C1 into the occiput. I would, however, examine the studies and consider this an option if it were anatomically possible. Assuming this technique is not viable, an occipito-cervical fixation procedure would be used with fixation to both C2 and C3. Lateral mass screw fixation would be used at C3. Fixation at C2 would be accomplished with either pars or pedicle screw fixation if possible, otherwise sublaminar cable fixation may be used. Autologous bone graft from the iliac crest would be used for the arthrodesis, and the patient would be maintained in either the halo vest or a rigid collar for 6-8 weeks following surgery.

In the event that the deformity is not fully reducible, a judgment call must be made as to whether or not a transoral resection of the odontoid would be required. This call would be made based upon the extent of reduction achieved. I would certainly endeavor to avoid the anterior decompression if at all possible.

- I would place this man in traction for 48 hours and repeat his MR scan (while in the traction). If his alignment was improved and the anterior compression produced by the odontoid relieved then I would perform a posterior fossa decompression and duraplasty in conjunction with a posterior fusion. The fusion would be accomplished using rigid screw fixation from the occiput to C2. I would obtain purchase in the C1 lateral mass but without a more complete set of images I do not know if this would be via a transarticular screw or direct placement of a C1 screw. Rib would serve as the autograft substrate. If the traction did not eliminate the brainstem compression then a transoral resection of the odontoid would need precede the previously described posterior procedure.

- Given that the patient has recurrent and progressive symptoms, I would recommend surgery. I would add cervical spine x-rays including flexion extension views as well as a cine MRI to further delineate the level and degree of obstruction of CSF flow around cervical medullary junction. Typically patients with congenital pathology resulting in upward migration of the odontoid, do not respond to traction in an attempt at reducing the compression and I would not include this in the treatment regimen. Since the patient has significant ventral bony compression of the medulla which is irreducible I believe that the patient will require a transoral decompression. Given the Chiari I malformation and the posterior compressive pathology including the posterior lip of the foramen magnum – I would perform a small posterior fossa craniectomy, C1, C2 laminectomy and occipito-cervical fusion.

The treatment plan ultimately involves restoration of CSF flow around the foramen magnum to reduce the size of the cervicothoracic syrinx.

**FINAL SCORE:**

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<thead>
<tr>
<th>Procedure</th>
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<tbody>
<tr>
<td>Primary Posterior Decompression &amp; Fusion</td>
<td>2</td>
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<tr>
<td>Primary Anterior Decompression &amp; Posterior Fusion</td>
<td>4</td>
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<tr>
<td>Primary Syrinx Shunting Procedure</td>
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**Editor’s Note**

This is a case of mine, treated almost 2 years ago. All but one of our experts indicated a role for pre-operative traction. When I read their comments I was somewhat surprised at how optimistic they sounded that reduction might be achieved. I was personally more pessimistic in view of the congenital nature of the deformity, sharing the opinion of the last reviewer. Nonetheless traction was attempted for 3 days with 40 lbs but did nothing to extricate the odontoid from the cranium at all. The patient subsequently went on to have a transoral odontoid resection, posterior craniectomy, duraplasty and instrumented fusion under a single anaesthetic. The single surgery was his request; I would have preferred to stage the procedure.
There was a tremendous amount of tongue and pharyngeal edema post-operatively requiring a temporary tracheostomy. Recovery was otherwise unremarkable. Follow-up one year post-operatively documented the patient’s headaches to have resolved, his numbness and tingling to have subjectively improved, and motor and sensory exam to be normal, with residual mild hyperreflexia. MR follow-up at 1 year showed no further compression of the brainstem with a significant reduction in the size of the cervical syrinx. Plain x-rays suggested the presence of a solid bony union.

Many thanks to our expert panel consisting of, in alphabetical order:

Dr. A. Levi (University of Miami)
Dr. Curtis Dickman (Barrow Neurological Institute)
Dr. Vincent Traynelis (University of Iowa)
Dr. Daniel Resnik (University of Wisconsin)
Dr. Robert Heary (Neurological Institute of New Jersey)
Dr. Ed Benzel (Cleveland Clinic)

John Hurlbert (editor)
Photograph depicting setup for anterior approach. Soft palate split was required to reach the tip of the odontoid process inside the foramen magnum.

Photograph demonstrating application of short segment craniocervical fixation device. The posterior ring of C1 has been removed (middle picture) and an occipital craniectomy has been performed. A synthetic dural graft substitute can be seen sutured into place extending from the occiput (right) to the C2 lamina (left) for the expansive duraplasty. Caudal screws achieve C1/2 transarticular fixation. Rostral screws anchor the plate device into the thick midline occipital bone.
Pre- and Post-Operative imaging studies. (1) The T1 weighted sagittal MR sequences in the top panel display the degree of anterior and posterior decompression achieved in front of the medulla and below the cerebellum. (2) The T2 weighted sagittal MR images in the second panel show the size of the syrinx before and after surgery. (3) The bottom panel attests to ongoing craniocervical stability one year post-operatively.

**AANS/CNS Joint Section on Disorders of the Spine and Peripheral Nerves – Rules and Regulations Proposed Change: Research and Awards Committee**

Section 5.05 Research and Awards Committee

The Research and Awards Committee shall consist of seven members, each serving a three year term. The Executive Committee shall appoint 2 new members each year. The current Chairpersons of the Awards Committee and the Research Committee will serve as Co-Chairpersons of this Committee until the next Annual Meeting of the Combined Section, at which time a new Chairperson or Co-Chairpersons will be appointed by the Chairperson of the Section. Every three years thereafter, the Section Chairperson shall appoint a new Committee Chairperson(s), subject to ratification by the Executive Committee, who shall serve an additional three year term. This Committee shall conduct and coordinate the scientific and research activities of the Joint Section, at the will of the Joint Section Executive Committee. The Committee shall be responsible for soliciting applications for and selecting finalists and awardees for the Larson, Kline, and Apfelbaum Research Awards, the Cloward and Cahill Fellowship Awards, the Sonntag and Crockard International Fellowship Awards, and the Mayfield Award(s). The nomination and selection of candidates for the Meritorious Service Medal will not be the responsibility of this Committee, but will be the responsibility of the Past-Chairperson, the current Chairperson, and the Chairperson-Elect of the Joint Section.

The Larson, Kline, and Apfelbaum Research Awards may be awarded each year at the Joint Section Annual Meeting. These Awards are intended to establish funding for clinically relevant research related to the spine and peripheral nerves, and to provide a means of peer review for clinical research projects to help improve the quality of the proposal and therefore enhance competitiveness for N.I.H. funding. A secondary goal of the Awards is to create an annual funding mechanism aimed at answering questions pertaining to the treatment of disorders of the spine and peripheral nerves. The Larson Award is limited to clinical research with funding up to $30,000. The Apfelbaum Award, which funds up to $15000, is for either clinical or basic science research related to the spine. The Kline Award, which funds up to $15000, is for clinical research related to peripheral nerves.

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peripheral nerves. This funding is to be provided for post-graduate or residency fellowship training away from the parent institution. The amount of each of these Awards is $30,000.

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The Mayfield Award may be awarded annually at the Joint Section Annual Meeting to a neurosurgical resident or fellow who authors an outstanding manuscript detailing a laboratory or clinical investigation in the area of spinal or peripheral nerve disorders. The intent of the Award(s) is to recognize and promote research among residents and fellows in training in the surgical subspecialty of Neurological Surgery. Two Awards are available, one for clinical research and one for basic science research. Each Mayfield Award consists of a $1000 cash award, and $2000 to cover the expenses of attendance at the Annual Meeting of the Section.

**Comments, Submissions, or Suggestions for the Spine Section?**

Please e-mail Larry Khoo at LKhoo@mednet.ucla.edu or contact through surface mail: Dr. Larry Khoo, 10833 Le Conte Avenue, Suite 74-140 CHS, Division of Neurosurgery, UCLA Medical Center, Los Angeles, CA 90095